

WHAT IS CLAIMED IS:

1 1. A photocurable composition for forming a dielectric layer on
2 a substrate, the photocurable composition comprising:
3 a first acrylated oligomer;
4 a second acrylated oligomer having a viscosity less than the first;
5 a wax;
6 an acrylated monomer; and
7 a photoinitiator.

1 2. The photocurable composition of claim 1 wherein the first
2 acrylated oligomer comprises a component selected from the group consisting of an
3 acrylated epoxy oligomer, an acrylated polyester oligomer, acrylated silicone
4 oligomer, acrylated acrylic oligomer, acrylated urethane oligomer, an acrylated
5 melamine oligomer, and mixtures thereof.

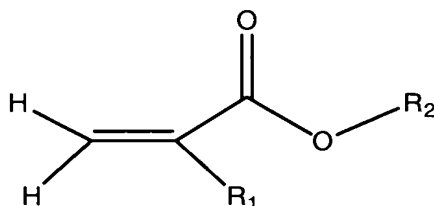
1 3. The photocurable composition of claim 1 wherein the first
2 acrylated oligomer comprises aliphatic urethane acrylate.

1 4. The photocurable composition of claim 3 wherein the aliphatic
2 urethane acrylate comprises a component selected from the group consisting of
3 aliphatic urethane monoacrylates, aliphatic urethane diacrylates, aliphatic urethane
4 triacylates, and mixtures thereof.

1 5. The photocurable composition of claim 1 wherein the second
2 acrylated oligomer comprises a component selected from the group consisting of an
3 acrylated epoxy oligomer, an acrylated polyester oligomer, acrylated silicone
4 oligomer, acrylated acrylic oligomer, acrylated urethane oligomer, an acrylated
 melamine oligomer, and mixtures thereof.

1 6. The photocurable composition of claim 1 wherein the second
 2 acrylated oligomer comprises a component selected from the group consisting of an
 3 aliphatic monoacrylates oligomer, aliphatic diacrylate oligomer, an aliphatic
 4 triacrylate oligomer, and mixtures thereof.

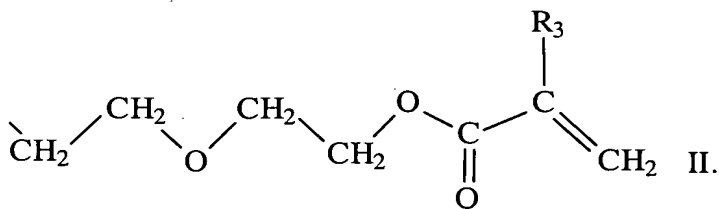
1 7. The photocurable composition of claim 1 wherein the acrylated
 2 monomer comprises a component having formula I:



I

4 wherein R₁ is hydrogen or substituted or unsubstituted alkyl; and R₂ is substituted or
 5 unsubstituted alkyl having more than 4 carbon atoms, a cycloalkyl, a cycloalkenyl,
 6 or a substituted or unsubstituted aryl.

1 8. The photocurable composition of claim 7 wherein R₁ is
 2 hydrogen or methyl; and R₂ is isoborynlyl, phenyl, benzyl, dicyclopentenyl,
 3 dicyclopentenyl oxyethyl, cyclohexyl, naphthyl, 3,3,5-trimethyl cyclohexyl, or



4

wherein R₃ is hydrogen or a substituted or unsubstituted alkyl.

1 9. The photocurable composition of claim 4 wherein the acrylated
2 monomer comprises a component selected from ethylene glycol dicyclopentyl ether
3 acrylate, an isobornyl acrylate, diethylene glycol dimethacrylate and mixtures
4 thereof.

1 10. The photocurable composition of claim 1 wherein the wax
2 comprises a micronized wax.

1 11. The photocurable composition of claim 1 wherein the wax
2 comprises a polyolefin wax.

1 12. The photocurable composition of claim 1 further comprising
2 a talc.

1 13. The photocurable composition of claim 1 wherein:
2 the first acrylated oligomer is present in an amount from about 5
3 weight percent to about 80 weight percent;
4 the second acrylated oligomer is present in an amount from about 1
5 weight percent to about 30 weight percent;
6 the wax is present in an amount from 1 weight percent to about 60
7 weight percent;
8 the acrylated monomer is present in an amount from about 5 weight
9 percent to about 80 weight percent; and
10 the photoinitiator is present in an amount from about 0.1 weight
11 percent to about 20 weight percent.

1 14. The photocurable composition of claim 1 further comprising
2 an amine functional acrylate co-initiator.

1 15. The photocurable composition of claim 1 further comprising
2 a component selected from a pigment, a flow promoting agent, and mixtures thereof.

1 16. A photocurable composition for forming a dielectric layer on
2 a substrate, the photocurable composition comprising:

3 an aliphatic urethane acrylate;

4 an acrylated oligomer having a viscosity less than the aliphatic
5 urethane acrylate;

6 a polyolefin wax;

7 an acrylated monomer; and

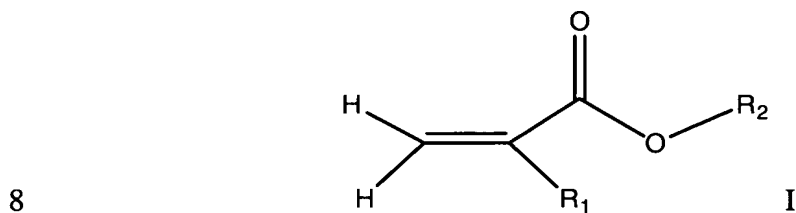
8 a photoinitiator.

1 17. The photocurable composition of claim 16 wherein the aliphatic
2 urethane acrylate comprises a component selected from the group consisting of
3 aliphatic urethane monoacrylates, aliphatic urethane diacrylates, aliphatic urethane
4 triacylates, and mixtures thereof.

1 18. The photocurable composition of claim 16 wherein the
2 acrylated oligomer having a viscosity less than the aliphatic urethane acrylate
3 comprises a component selected from the group consisting of an acrylated epoxy
4 oligomer, an acrylated polyester oligomer, acrylated silicone oligomer, acrylated
5 acrylic oligomer, acrylated urethane oligomer, an acrylated melamine oligomer, and
6 mixtures thereof.

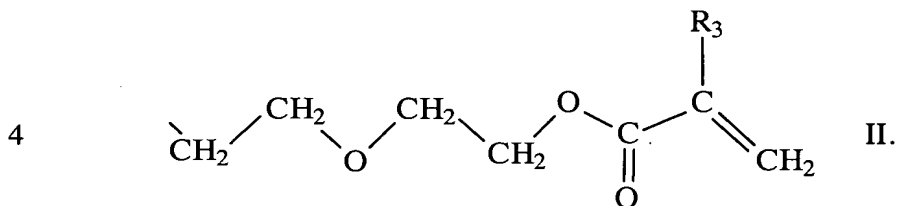
1 19. The photocurable composition of claim 16 wherein the
2 acrylated oligomer having a viscosity less than the aliphatic urethane acrylate
3 comprises a component selected from the group consisting of an aliphatic
4 monoacrylates oligomer, aliphatic diacrylate oligomer, an aliphatic triacrylate
5 oligomer, and mixtures thereof.

- 6 20. The photocurable composition of claim 16 wherein the
7 acrylated monomer comprises a component having formula I:



- 9 wherein R_1 is hydrogen or substituted or unsubstituted alkyl; and R_2 is substituted or
10 unsubstituted alkyl having more than 4 carbon atoms, a cycloalkyl, a cycloalkenyl,
11 or a substituted or unsubstituted aryl.

- 1 21. The photocurable composition of claim 20 wherein R_1 is
2 hydrogen or methyl; and R_2 is isoborynl, phenyl, benzyl, dicyclopentenyl,
3 dicyclopentenyl oxyethyl, cyclohexyl, naphthyl, 3,3,5-trimethyl cyclohexyl, or



- 5 wherein R_3 is hydrogen or a substituted or unsubstituted alkyl.

- 1 22. The photocurable composition of claim 16 wherein the
2 acrylated monomer comprises a component selected from ethylene glycol
3 dicyclopentyl ether acrylate, diethylene glycol dimethacrylate an isobornyl acrylate,
4 and mixtures thereof.

1 23. The photocurable composition of claim 16 wherein the
2 polyolefin wax comprises a micronized polyolefin wax.

1 24. The photocurable composition of claim 16 wherein the
2 polyolefin wax comprises a wax selected from the group consisting of polyethylene,
3 polypropylene, and mixtures thereof.

1 25. The photocurable composition of claim 16 wherein:
2 the aliphatic urethane oligomer is present in an amount from about 5
3 weight percent to about 80 weight percent;
4 the acrylated oligomer is present in an amount from about 1 weight
5 percent to about 30 weight percent;
6 the polyolefin wax is present in an amount from 1 weight percent to
7 about 60 weight percent;
8 the acrylated monomer is present in an amount from about 5 weight
9 percent to about 80 weight percent; and
10 the photoinitiator is present in an amount from about 0.1 weight
11 percent to about 20 weight percent.

1 26. The photocurable composition of claim 16 further comprising
2 an amine functional acrylate co-initiator.

1 27. The photocurable composition of claim 16 further comprising
2 a component selected from a pigment, a flow promoting agent, and mixtures thereof.

1 28. A photocurable composition for forming a dielectric layer on
2 a substrate, the photocurable composition comprising:
3 an aliphatic urethane acrylate;

4 an acrylated oligomer having a viscosity less than the aliphatic
5 urethane acrylate;
6 a polyolefin wax;
7 an isobornyl acrylate;
8 an ethylene glycol dicyclopentyl ether acrylate;
9 amine functional acrylate co-initiator; and
10 a photoinitiator.

1 29. The photocurable composition of claim 27 wherein:
2 the aliphatic urethane oligomer is present in an amount from about 5
3 weight percent to about 80 weight percent;
4 the acrylated oligomer is present in an amount from about 1 weight
5 percent to about 30 weight percent;
6 the wax is present in an amount from 1 weight percent to about 60
7 weight percent;
8 the isobornyl acrylate is present in an amount from about 5 weight
9 percent to about 80 weight percent;
10 the an ethylene glycol dicyclopentyl ether acrylate is present in an
11 amount from about 5 weight percent to about 80 weight percent;
12 the amine functional acrylate co-initiator is present in an amount from
13 about 1 weight percent to about 10 weight percent;
14 a talc present in an amount from about 0.1 weight percent to about 25
15 weight percent; and
16 the photoinitiator is present in an amount from about 0.1 weight
17 percent to about 20 weight percent.

1 30. The photocurable composition of claim 27 further comprising
2 a pigment and a flow promoting agent.